

(No Model.)

W. V. WALKER.
WATER PURIFIER AND BOILER CLEANER.

No. 477,615.

Patented June 21, 1892.

Fig. 1.

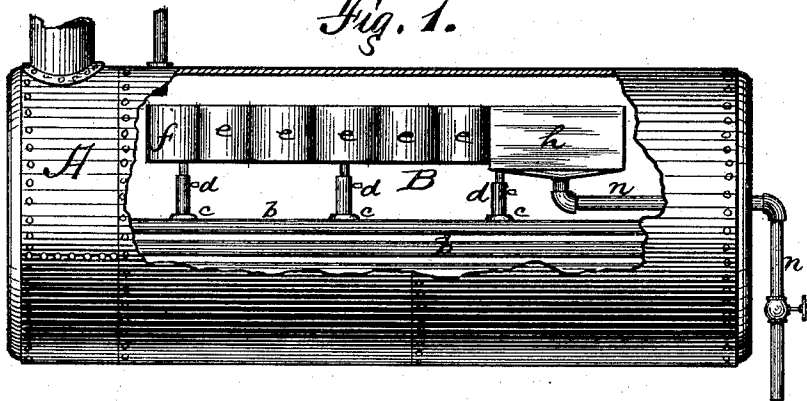


Fig. 2.

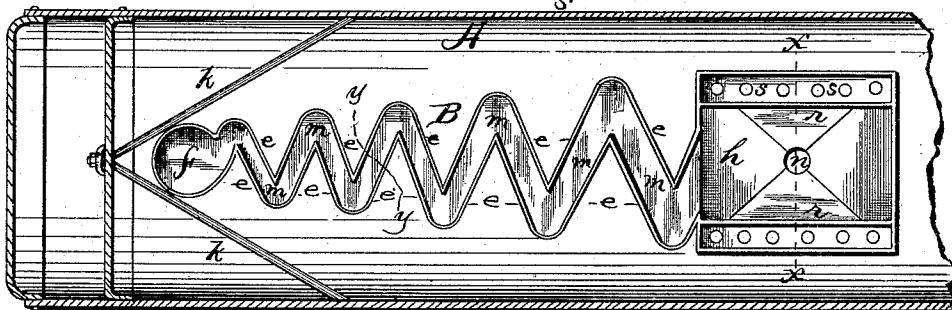


Fig. 4.

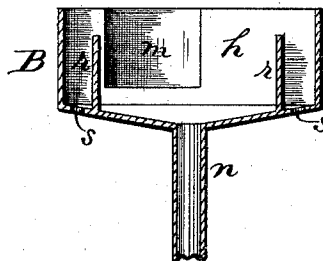
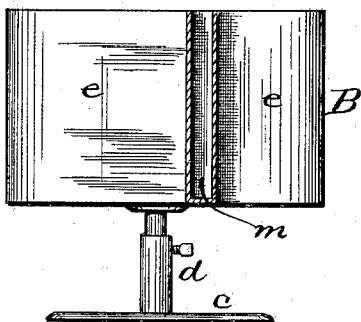


Fig. 3.

WITNESSES:
H. A. Carhart
H. E. Bates.

INVENTOR,
William V. Walker
BY
Smith & Devison
his ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM V. WALKER, OF MORAVIA, NEW YORK.

WATER-PURIFIER AND BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 477,615, dated June 21, 1892.

Application filed October 12, 1891. Serial No. 408,409. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM V. WALKER, of Moravia, in the county of Cayuga and State of New York, have invented new and useful Improvements in Water-Purifiers and Boiler-Cleaners, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to water-purifiers, boiler-cleaners, and feed-water purifiers.

My object is to produce an improved apparatus by and in which all the impurities or scale-forming substances in the water which can be precipitated by heat are eliminated from it, thereby preventing scale or incrustation in the boiler, such apparatus consisting in a pan set in the steam-chamber of the boiler and receiving the feed-water, said pan consisting of two vertical zigzag walls parallel or slightly diverging from each other, mounted upon a bottom of the same outline, and being also tapered for the whole or part of its length and provided with a reservoir or receiver at one end and at the other with a sediment-chamber of greater depth than the water-chamber between the walls, said chamber having a concaved bottom, said bridge-walls, and perforations behind these walls, through which the purified water escapes into the boiler proper, said pan being erected upon adjustable standards supported by the flues and the blow-off pipe being connected to the bottom of the sediment-chamber.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a boiler, showing one side broken out, so as to show my apparatus in side elevation. Fig. 2 is a top plan of the apparatus within the sectional view of the boiler. Fig. 3 is a vertical transverse section of the sediment-chamber on line X X, Fig. 2. Fig. 4 is a like view of the water-chamber on line y y, Fig. 2.

A is the boiler, and *b b* are the flues therein. Bars *c*, resting upon the flues, support the adjustable standards *d*, which carry the cleaner and purifier B in the steam-chamber. This is of substantially the form shown in the

drawings, comprising vertical zigzag walls or sides *e*, erected upon a suitable bottom of the same outline, and at the back opening outward from the water-receiver *f* and at the other end opening into the sediment-chamber *h*. These walls are preferably much higher than the width of the space between them, as shown in Fig. 4, so that a thin column of water is subjected to the heat of the surrounding stream and is more quickly heated to the point at which it will precipitate the impurities. These walls may be parallel or may gradually widen. When they do widen out, the flow of the water is correspondingly retarded. The back or receiving end is shown as narrow, in order that it may go clear back to the head of the boiler between the head-stays *k*.

The sediment-chamber *h* receives the water from the water-chamber *m*. Its bottom is dropped below that of that chamber, so that the flow will not disturb the sediment there collected, and is also concaved to the center, where the blow-off pipe *n* is located, and this chamber is further provided with bridge-walls *r*, over which the water flows into the side auxiliary chambers, whence it escapes into the boiler through the perforations *s*.

It will be seen that the whole device is a precipitate-pan, although most of the precipitate will be deposited in the front end; also, the water-chamber being narrow, when the sediment-chamber is blown off the suction and strong current of the water will wash all sediment out from between the walls of the former chamber.

The whole apparatus is made in sections of convenient size, to be put into the boiler through the ordinary manhole (not shown) and be secured together there in the customary manner.

The water entering the back end thence passes into the chamber between the walls. Its passage is retarded by the zigzag channel, so that it becomes fully heated and at least begins to precipitate the impurities before it enters the sediment-chamber, where it spreads out, completes the precipitation, and flows over the bridge-walls into the boiler. In its passage through the zigzag channel its flow is retarded, and more so when this channel is widened out, so there is very little current when it enters and spreads out in the sedi-

ment-chamber, and this, in addition to the drop-bottom, permits a quiet precipitation without any disturbance of the sediment. The water-channel walls may also be tapered between the end chambers, as shown in Fig. 2.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a boiler-cleaner, the combination, with the boiler and feed-water pipes, of a precipi-
10 tating apparatus comprising a water-receiver, a water-chamber consisting of continuous zigzag and gradually-diverging side walls and a bottom connected to the side walls and bottom of said receiver, and a sediment-cham-
15 ber connected to the water-chamber and comprising vertical side walls, a concaved bottom, transverse bridge-walls, and perforations between the side walls and the bridge-walls.

2. In a boiler-cleaner, the combination, with

the boiler and feed-water pipe, of a precipi- 20
tating apparatus comprising a water-receiver, a water-chamber tapering longitudinally and of greater height than depth connected there-
to and consisting of continuous zigzag side 25
walls and a bottom connected to the side walls and bottom of said receiver, and a sediment-chamber connected to the water-chamber and comprising vertical side walls, a concaved bot-
tom provided with a blow-off pipe, transverse 30
bridge-walls, and perforations between the side walls and the bridge-walls.

In witness whereof I have hereunto set my hand this 2d day of October, 1891.

WILLIAM V. WALKER.

In presence of—

C. W. SMITH,
HOWARD P. DENISON.